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मानक

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“पुराने को छोड़ नये के तरफ”

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“Step Out From the Old to the New”

IS 9181 (1988): C-Clamps [PGD 6: Earth, Metal And Wood Working Hand Tools]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
**SPECIFICATION FOR
 C-CLAMPS**

(*First Revision*)

1. Scope — Covers the dimensions and other requirements for C-clamps.

2. Types

- a) Light duty (*L*)
- b) Medium duty (*M*)
- c) Heavy duty (*H*)

3. Dimension

3.1 Dimensions for light duty and medium duty C-clamps shall be as given in Table 1.

3.2 Dimensions for heavy duty C-clamps shall be as given in Table 2.

4. Material

4.1 Body — Shall be forged from suitable steels, meeting the requirements laid down in 5 and 8.

Example:

35C4 and 45C8 conforming to IS : 1570 (Part 2)-1979 'Schedules for wrought steels: Part 2 Carbon steels (unalloyed steels)'.

4.2 Handle, Screws and Pressure Pad — Suitable steels meeting the requirements laid down in 5 and 8.

Example:

Handle and screw	:	50C8 conforming to IS : 1570 (Part 2)-1979
Pressure pad	:	35C4 and 40C8 conforming to IS : 1570 (Part 2)-1979

5. Hardness

5.1 Light Duty

5.1.1 *Body, screw pressure pad and handle* — 150 to 220 HV.

5.2 Medium Duty and Heavy Duty

5.2.1 *Body and screw* — 300 to 400 HV.

5.2.2 *Pressure pad and handle (for medium duty only)* — 150 HV, Min.

6. Designation

6.1 A light duty C-clamp of nominal size 125 mm and having depth of throat (*H*) 70 mm shall be designated as:

C-Clamp L 125 × 70 IS : 9181

6.2 A medium duty C-clamp of nominal size 150 mm and having depth of throat (*H*) 76 mm shall be designated as:

C-Clamp M 150 × 76 IS : 9181

6.3 A heavy duty C-clamp of nominal size 100 mm and having depth of throat (*b*) 70 mm shall be designated as:

C-Clamp H 100 × 70 IS : 9181

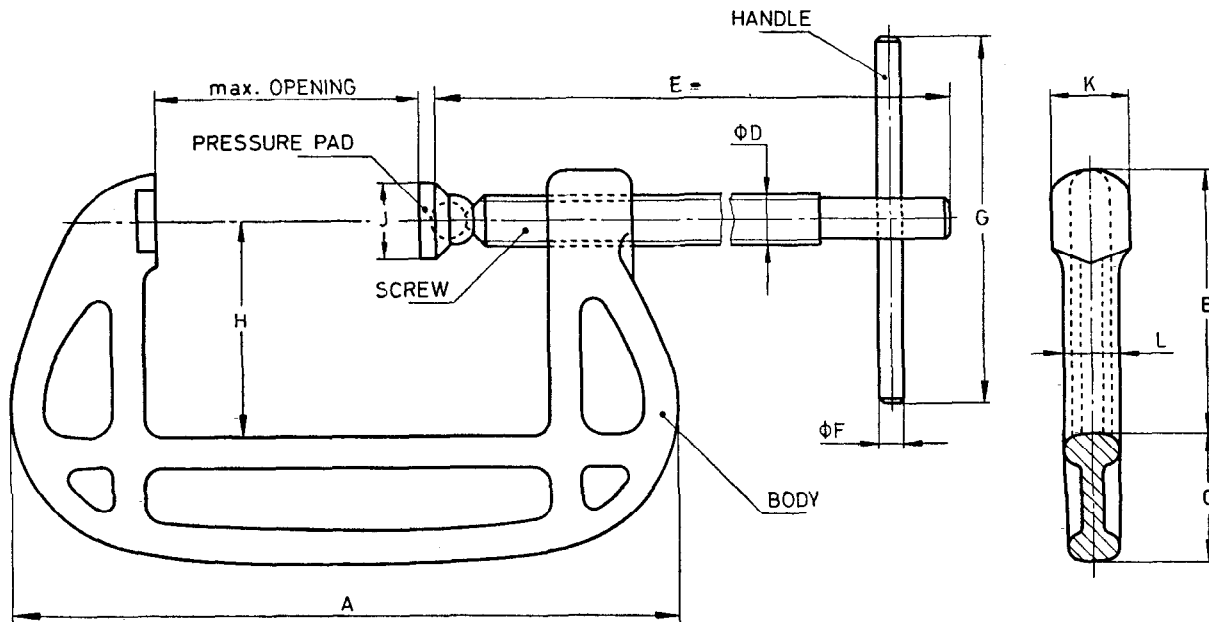
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TABLE 1 DIMENSIONS FOR LIGHT AND MEDIUM DUTY C-CLAMPS
(Clause 3.1)

All dimensions in millimetres.



Nominal Size (Max Opening)	Close Opening Max	A	B	C	D	E	F	G	H	J	K	L
		Min	Min	Min		Min	Min	Min	Min	Min	Min	Min
25	0	79	35.0	20	M10* or Tr 10×2†	81	4	52	25	18	14	10
50	0	114	49.0	26	M12* or Tr 12×3†	116	5	71	38	22	17	13
75	0	149	62.5	30	M12* or Tr 12×3†	145	5	89	50	22	20	14
100	0	187	75.0	37	M16* or Tr 16×4†	182	8	106	60	25	24	17
125	0	219	86.0	42	M16* or Tr 16×4†	210	8	120	70	25	25	18
150	0	249	93.0	45	M16* or Tr 16×4†	240	8	131	76	25	26	20
200	50	318	106.0	55	M20* or Tr 20×4†	300	9	148	86	32	28	22
300	50	430	120.0	60	M20* or Tr 20×4†	350	9	160	95	32	32	24

Note 1 — The maximum opening shall not be less than the nominal size.

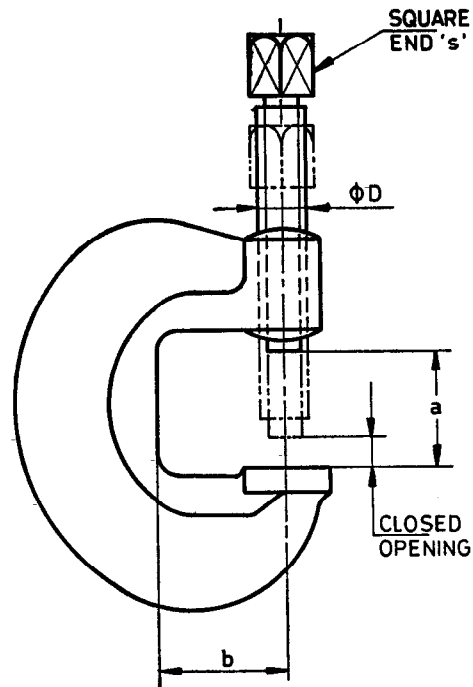
Note 2 — The illustrations are diagrammatic only and are not intended to illustrate the details of design.

*Conforming to IS : 4218-1976 'ISO metric screw threads'.

†Conforming to IS : 7008-1973 'ISO metric trapezoidal screw threads'.

TABLE 2 DIMENSIONS FOR HEAVY DUTY C-CLAMPS
(Clause 3.2)

All dimensions in millimetres.



Nominal Size (Max Opening)	Close Opening Max	a Opening Max	D	Working Depth of Throat b Min	Size of Square s
25	0	25	M10* or Tr 10×2†	25	13
50	22	50	M16* or Tr 16×4†	45	24
75	35	75	M20* or Tr 20×4†	56	24
100	50	100	M24* or Tr 24×8†	70	27
125	63	125	M24* or Tr 24×8†	75	27
150	80	150	M24* or Tr 24×8†	80	27
200	108	200	M30* or Tr 30×8†	90	30
250	160	250	M30* or Tr 30×8†	95	30
300	190	300	M30* or Tr 30×8†	100	30

Note 1 — The maximum opening shall not be less than the nominal size.

Note 2 — The illustrations are diagrammatic only and are not intended to illustrate the details of design.

*Conforming to IS : 4218-1976 'ISO metric screw threads'.

†Conforming to IS : 7008-1973 'ISO metric trapezoidal screw threads'.

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7. Workmanship and Finish — All parts of C-clamps shall be free from defects, like cracks, unfillings, pits, scale, seams, flashes, etc.

7.1 Handle for light duty and medium duty C-clamps shall be free from sharp edges and fitted in such a way that it does not come out from the screw.

7.2 In case of heavy duty C-clamps, the outer end of the screw shall be of square cross section to suit the preferred series of spanners. Suitable size hole in the screw at square cross section for insertion of a round bar for tightening purposes may also be provided.

8. Tests

8.1 Clamping Test — A rectangular piece of 12 mm thickness of mild steel shall be clamped manually between the gripping face of the body and the pressure pad screw. The test piece when clamped, shall not come out by a normal manual force-pull or push by hand alone.

8.2 Tension Load Test — The load test shall be conducted on a tensile testing machine or similar device of known accuracy. The C-clamps shall be able to withstand the minimum load given below. The test shall be conducted with the C-clamp in the full opening (maximum opening). The test load shall be applied gradually in line with the axis of the screw (the direction to be such as to cause the clamp to open) until the specified minimum load is obtained. This load shall be maintained for a minimum period of five minutes and the C-clamp shall not show any permanent set.

Nominal Size mm	25	50	75	100	125	150	200	250	300
Test load for light duty, kg, <i>Min</i>	150	200	240	280	320	360	400	—	480
Test load for medium duty, kg, <i>Min</i>	1 000	1 225	1 450	1 675	1 900	2 125	2 350	—	2 800
Test load for heavy duty, kg, <i>Min</i>	2 550	5 675	7 400	9 100	10 800	12 500	14 200	15 900	18 200

9. Preservation and Packing — The C-clamp shall be coated with a suitable rust proofing material.

9.1 Each C-clamp shall be packed separately.

10. Sampling — Unless otherwise agreed to between the supplier and the purchaser, the procedure given in IS : 2500 (Part 1)-1973 'Sampling inspection tables: Part 1 Inspection by attributes and by count of defects (*first revision*)' shall be followed for sampling inspection. For various characteristics, the sampling plan as given in **10.1** and **10.2** shall be followed.

10.1 For inspection of dimensions and workmanship and finish, the sampling plan with Inspection Level III and Acceptable Quality Level (AQL) 2.5 percent given in Tables 1 and 2 of IS : 2500 (Part 1)-1973 shall be followed.

10.2 For hardness and tests, the sampling plan with Inspection Level I and Acceptable Quality Level (AQL) 2.5 percent given in Tables 1 and 2 of IS : 2500 (Part 1)-1973 shall be followed.

11. Marking — The body of C-clamp shall be marked with the nominal size, type, manufacturer's name, initials and/or recognized trade-mark and year of manufacture.

11.1 Standard Marking — Details available with the Bureau of Indian Standards.

EXPLANATORY NOTE

This standard was first issued in 1979. This revision has been taken up in order to include 300 mm size light and medium duty clamps and complete range of heavy duty C-clamps which are most widely used in the country. The dimensions have also been rationalised.

While preparing this standard, assistance has been derived from the data received from manufacturers and users of the product and Federal Specification GGG-C-00406b (GSA-FSS)-1963 'Clamps and hand screws', issued by the Federal Supply Services, General Services Administration, USA.